



PASSF
224
11/1992

**Phase I Remedial Investigation
Pasco Landfill
Pasco, Washington
Volume III - Data Management Plan**

November 1992

Prepared for:

Pasco Landfill PLP Group

Project 624419

Prepared by:

BURLINGTON ENVIRONMENTAL INC.
Technical Services Division
7440 West Marginal Way South
Seattle, Washington 98108-4141
(206) 767-3306

Printed on recycled paper



ABSTRACT

The Phase I Remedial Investigation Work Plan for the Pasco Landfill in Pasco, Washington describes the various steps or phases essential to the investigation process and defines the activities that will be conducted during this investigation. This Phase I Remedial Investigation will be completed under an Agreed Order with the Washington Department of Ecology (Order No. DE92TC-E105) and in compliance with the Model Toxics Control Act (Chapter 70.105D RCW and Chapter 173-340 WAC). Because the Pasco Landfill site is on the National Priority List, the Phase I Remedial Investigation will also be conducted in a manner consistent with the National Contingency Plan (40 CFR Part 300).

The objective of this investigation is to gain additional information on the nature and extent of contamination in the air, soil, and groundwater near potential contaminant sources at the Pasco Landfill. A Preliminary Risk Assessment will also be completed. This Work Plan describes the various steps proposed for gathering the necessary site characterization information and data and for performing the Preliminary Risk Assessment.

As part of the Work Plan (Volume I), a Sampling and Analysis Plan (Volume II), a Data Management Plan (Volume III), a Health and Safety Plan (Volume IV), and a Public Participation Plan (Volume V) have been developed for the performance of this project. Completion of the work defined in these planning documents will be followed by a Phase II Remedial Investigation (if necessary) and a Feasibility Study. The Washington Department of Ecology will ascertain the need for additional remedial investigation activities and the scope of the Feasibility Study based on the findings from the Phase I Remedial Investigation. Following the Feasibility Study, any need for remedial action will be determined by the Washington Department of Ecology.

TABLE OF CONTENTS

1	INTRODUCTION	1
2	SOURCES OF DATA	3
3	PROCESS OVERVIEW	5
4	MANAGEMENT OF DATA ENTRY	9
4.1	Entry of Hard-Copy Data	9
4.1.1	Quality Assurance of Hard-Copy Data Entry	9
4.2	Entry of Computerized Data	13
4.2.1	Quality Assurance of Computer-to-Computer Data Entry	14
5	STANDARDIZATION OF THE DATA RECORD	15
6	DATA REPORTING TO ECOLOGY	23
7	COMPUTER SYSTEM SECURITY	25

LIST OF FIGURES

1	Overview of Data Management Process	7
2	Data Management Procedure for Data Entry	11

LIST OF TABLES

1	Field Definitions for Site Description File	16
---	---	----

1 INTRODUCTION

This document presents Burlington Environmental Inc.'s (Burlington's) plan for the management of environmental data that will be collected at the Pasco Landfill during the Phase I Remedial Investigation. The success of this environmental investigation depends on the conclusions drawn from large volumes of data that will come from various sources and in various forms. Therefore, a quality-assured and efficient data management plan is critical.

Without proper data management, environmental investigations face several problems, the most common of which is inaccurate transcription. Inconsistency in referencing data is another common problem. For example, a monitoring well may be referenced as MW-1 for one sampling, then as MW-01 for future samplings. With two separate references for the same well, miscalculations in the final analysis may result. Similarly, analytes, particularly organic analytes, are frequently identified in an inconsistent manner as in the case of ethylene dichloride and 1,2-dichloroethane; both are appropriate names for the same analyte. These and other data management problems will be avoided through implementation of this Data Management Plan. This plan requires that a set of procedures be strictly followed, which will result in a quality-assured data base that offers structure, coordination, consistency, traceability, efficiency, and informational security. The resulting data base will be comprehensive enough to accommodate the needs of all parties involved in the project.

The following sections of this plan describe the sources of data, an overview of the data management process, the management of data entry, standardization of data records, and computer system security.

2 SOURCES OF DATA

It is anticipated that there will be five sources of data for the Pasco Landfill project. These include existing groundwater well information and analytical data, field data, analytical results from contracted laboratories, Burlington's RECON® System, and field screening data. These data will be made available in hard-copy or computerized form for input into the project master data file.

3 PROCESS OVERVIEW

Figure 1 presents a schematic overview of the Burlington data management process. The process carries out the following four steps, which are performed at the beginning of the project.

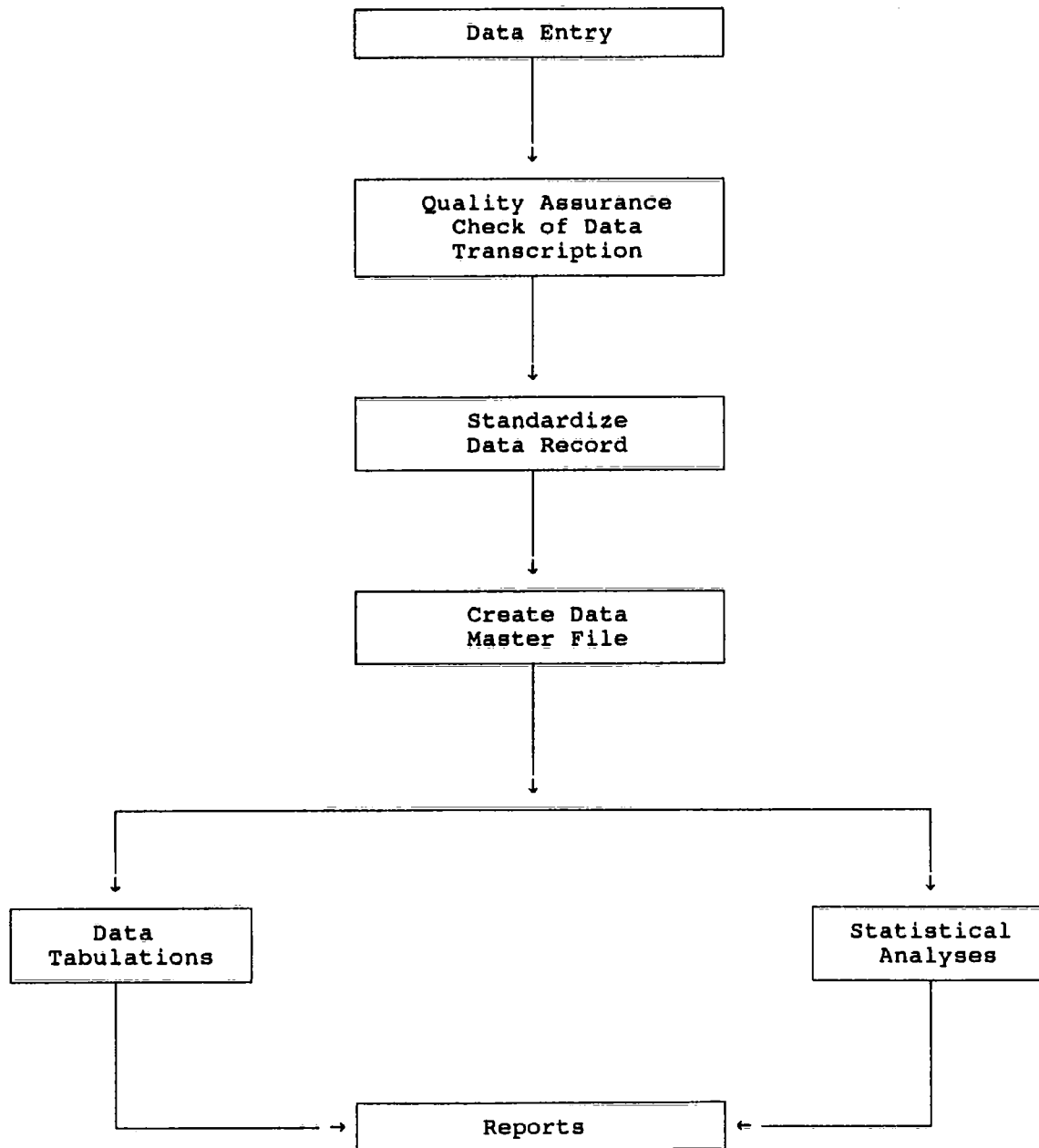
1. Data is entered into the Burlington computer system.
2. Data transfer and/or data transcription is quality assured.
3. The quality-assured data is transformed into the Burlington format.
4. The master data file is created. This file is reformatted for submittal to the Washington State Department of Ecology (Ecology).

Once the master data file containing quality-assured data is created, the data are available for tabulation, statistical analyses, and report generation. All data tabulations and statistical analysis results are traceable to the secured master data file. The master file in turn is fully traceable to the original source of data.

Figure 1

OVERVIEW OF DATA MANAGEMENT PROCESS

PASCO LANDFILL
PASCO, WASHINGTON



4 MANAGEMENT OF DATA ENTRY

The procedures for entering data into the Burlington computer system and quality assurance of the data transcription depend upon the source and format of the data. For the Pasco Landfill, it is anticipated the data will come in two forms: hard-copy or computer media. The detailed procedures for data entry and quality assurance for both forms of data are presented below. Figure 2 is a diagram of these procedures.

4.1 Entry of Hard-Copy Data

Upon receipt of a hard-copy data report, a second copy is made for working purposes and the original as-received data report is filed in the Burlington central files under the Pasco Landfill project reference. The data along with appropriate identifiers and qualifiers necessary to complete Burlington's data record are key entered into the Burlington computer system and a check print is prepared for quality assurance.

4.1.1 Quality Assurance of Hard-Copy Data Entry

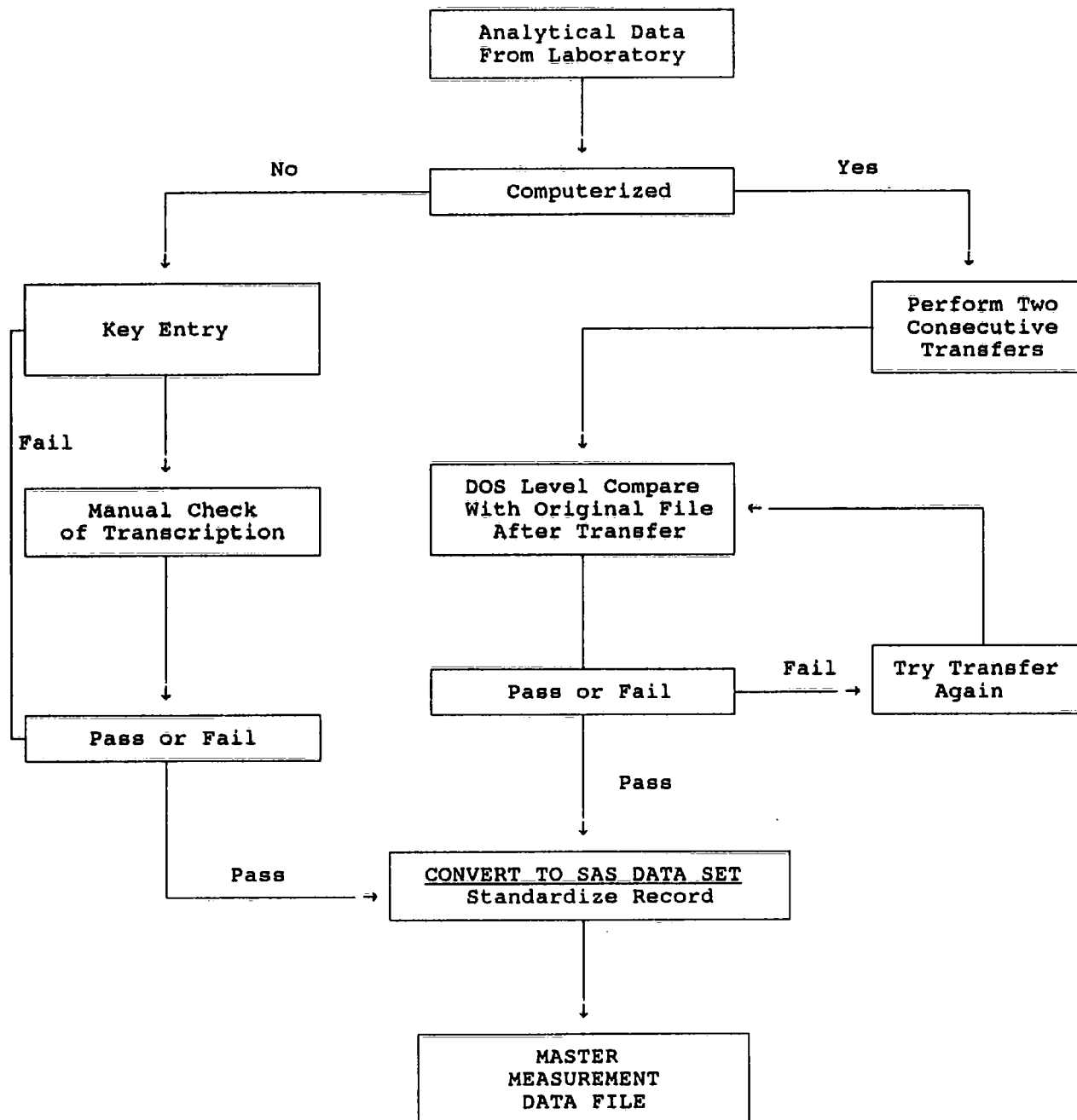
The following steps are taken to quality assure analytical data that are key entered into the Burlington computer system from hard-copy reports.

1. A Quality Control (QC) clerk is designated as responsible for performing quality assurance checks on the data transcription. This QC clerk is someone other than the individual who key enters the data. The QC clerk is assigned and/or approved by the Burlington project manager.

Figure 2

DATA MANAGEMENT PROCEDURE
FOR DATA ENTRY

PASCO LANDFILL
PASCO, WASHINGTON



2. The QC clerk checks every item entered and printed on the computer check print.
3. The QC clerk color codes with a yellow marker all items in the above-mentioned computer check print that correspond with items on the original data.
4. If the QC clerk finds a discrepancy in the data, the item in question is color coded with a red marker and annotated with corrections or comments.
5. The QC clerk signs and dates all pages of the computer check print and returns all check prints to the data base manager for the project.
6. The data base manager reviews the discrepancies and corrects the data base so it agrees with the check prints. If necessary, the data base manager confers with the project manager to resolve discrepancies.
7. A new check print is created and the QC clerk checks that all discrepancies were resolved. A one-to-one correspondence between the original data, check prints, and the data base must exist.
8. The final check prints are bound and kept for the active duration of the project by the data base manager for the project. This record becomes part of the project file.

4.2 Entry of Computerized Data

Computerized data can be transferred to the Burlington data base via modem or floppy disk. Floppy disks are the most efficient. The data base manager establishes an appropriate computer-to-computer communications protocol. For all computer-to-computer transfers, a hard copy of the data should also be sent.

4.2.1 Quality Assurance of Computer-to-Computer Data Entry

If data are received on a floppy disk, a check program is run on the contents of the files. The program assures every necessary field is included and also performs summaries on a number of fields to confirm all values for a certain field are included. For example, the check program will list all the sample locations and parameters in the transferred data base, which can be checked against a hard copy of the original data.

If the data are received via a modem, the following quality assurance steps will be taken because of the possibility of "noise" occurring during the transfer.

1. Two complete data transfers are performed.
2. The computer files resulting from these data transfers are compared using the DOS file compare utility.
3. The results of the file comparison are recorded and become a part of the project file.
4. If the results of the file comparison indicate differences between the data transfers, a third transfer is made and the third file is compared to the previous two files.
5. When two files are identical according to the DOS compare utility, the data transfer is declared successful.
6. The file resulting from a successful transfer of data is converted into the data base and summaries of sample and analyte identifiers are made.
7. The summaries are compared to available hard-copy analytical reports and/or tabulations of samples collected. The data base manager notes discrepancies for the project file and resolves discrepancies with the appropriate authority.
8. The data base manager makes the necessary corrections to the data file and notes the nature of the correction for the project file.

5 STANDARDIZATION OF THE DATA RECORD

Upon completion of all quality assurance checks of the data transcription, steps are taken to transform the data record into the standardized data record required by Ecology as described in Table 1. A salient feature of this record format is the Burlington Measurement Identifier, which provides an association with the Burlington standard table of measurement identifiers. Thus, all data tabulations and summarizations will identify measurements in an appropriate and consistent manner.

Once all data records have been standardized, a project-specific master file of the Pasco Landfill data will be created. This master file will be a SAS System Software (SAS) data set constructed in a secure area of the Burlington computer system. Documentation in the form of SAS procedure logs of the programs used to standardize the data record and create the master file will be bound and kept for the active duration of the project by the data base manager. These records will become part of the project file.

Burlington is licensed to use the SAS for data management, analyses, and tabulation. This software product is licensed from the SAS Institute in Cary, North Carolina, and is internationally recognized as a standard for conducting statistical analysis. In addition to being quality assured by an international users organization, SAS is supported on a wide range of computing equipment—from personal computers to large mainframes.

SAS conveniently interfaces with most popular spreadsheet and data base software. This allows Burlington to readily receive and supply data in dBASE, Lotus, or ASCII file formats. In addition, any SAS procedural software developed by Burlington will perform its designated task on computing equipment of the PLP Group, Ecology, or others, with little modification, provided they have a license to use the SAS System.

Table 1

FIELD DEFINITIONS FOR SITE DESCRIPTION FILE

PASCO LANDFILL,
PASCO, WASHINGTON

Field	Type	Width	Definition
REP_DATE	D	10	Reporting data (mm/dd/yyyy).
REP_NAME	C	48	Reporting entity, data submitted by.
PRJ_NAME	C	48	Project, site, or facility name.
STA_USE	C	1	Well use (USGS codes): O-observation, W-water withdrawal, X-waste disposal, D-drain, T-test hole, E-geothermal, P-oil/gas, U-unused, R-recharge, Z-destroyed.
WTR_USE	C	1	Water use (USGS codes): W-water quality/level monitoring, D-dewatering, N-industrial, S-stock supply, B-bottling, I-irrigation, Q-aquaculture, U-unused, C-commercial supply, H-domestic supply, P-public supply, J-industrial cooling, F-fire protection, Z-other.
DATA_REL	C	1	Data Reliability (USGS codes): C-field checked, L-poor location, U-unchecked.
STA_ID	C	12	Well ID number.
PRI_STA	C	15	Ecology primary station code. To be obtained from Ecology TCP.
SEC_STA1	C	12	Additional station code (previous well numbers, alternate or other well designations).
SEC_STA2	C	12	Additional station code (if any).
SEC_STA3	C	12	Additional station code (if any).
STATE_FIPS	C	2	State FIPS code (WA-53).
COUNTYFIPS	C	3	County FIPS code (use state county code).
STATE_CHAR	C	2	State (WA).
COUNTYCHAR	C	16	County.
OWN_NAME	C	30	Monitoring well owner name.
OWN_DT	C	8	Date of ownership of well (mm/dd/yy).
OWN_ADD	C	60	Address of owner.

Table 1, Continued

FIELD DEFINITIONS FOR SITE DESCRIPTION FILE

PASCO LANDFILL
PASCO, WASHINGTON

Field	Type	Width	Definition
DRILLER	C	30	Name of Driller.
STA_DESC	C	48	Well location description (for example: "East of Bldg. 2" or "SE corner, intersection 6th & Seneca").
LOC_METHD	C	48	Method of determination of well location coordinates (Note: survey to known horizontal datum is required).
LAT	N	8	Latitude OPTIONAL (degrees - minutes - seconds - tenths).
LONG	N	9	Longitude OPTIONAL (degrees - minutes - seconds - tenths).
STPCO_NORT	N	12	Northerly state plane coordinates REQUIRED (nearest ft.).
STPCO_EAST	N	12	Easterly state plane coordinates REQUIRED (nearest ft.).
STPCO_ZONE	C	1	State plane coordinates: state plane zone REQUIRED (N or S).
LAND_NET	C	20	Land net location of well (Township, Range, Section, ¼-¼ Sec.). Use USGS ¼-¼ section alphabetic designator A through R OPTIONAL.
UTM_NORTH	N	9	UTM grid system coordinates: North (meters) OPTIONAL.
UTM_EAST	N	8	UTM grid system coordinates: East (meters) OPTIONAL.
MAP_NAME	C	24	Name of USGS map and scale covering the sampling location (e.g., Yakima 100K).
HOLE_DEP	N	8	Depth of original hole drilled (nearest 0.01 ft.).
WELL_DEP	N	8	Well depth (nearest 0.01 ft.).
WTR_ELEV1	N	8	Water level elevation at time of installation (nearest 0.01 ft.).
WLEV_DAT1	D	10	Date of water level elevation measurement (mm/dd/yyyy).
MEAS_ELEV	N	8	Measuring point (reference point) elevation (nearest 0.01 ft.).
MEAS_DESC	C	48	Measuring point description.

Table 1, Continued

FIELD DEFINITIONS FOR SITE DESCRIPTION FILE

PASCO LANDFILL
PASCO, WASHINGTON

Field	Type	Width	Definition
DATUM	C	48	Measuring point datum.
LEV_COMM	C	240	Comments, depth, and water level data.
ALTITUDE	N	8	Approximate land surface elevation XXXXX.XX (ft.)
DEPTOWTR1	N	8	Water depth at time of installation (nearest 0.01 ft.)
CONST_DT	D	10	Date of installation (mm/dd/yyyy).
MOREINT	C	1	More than one open interval (Y/N).
TOP_OPN1	N	8	Depth to top of open interval (ft. below measuring point).
BOT_OPN1	N	8	Depth to bottom of open interval (ft. below measuring point).
CONST_COMM	C	240	Comments, construction details.
MTD_CON	C	1	Method of construction (USGS WATSTORE codes): A-air rotary, B-bored/augured, C-cable tool, D-dug, H-hydraulic rotary, J-jetted, P-air percussion, T-trenching, V-driven, W-drive wash, R-reverse rotary, X-mud rotary, Z-other.
FILT_LEN	N	5	Length of filter pack (nearest 0.01 ft.).
FILT_MAT	C	48	Type of filter pack material and size of material (e.g., Sand 200 mesh).
DIA_BOR	N	8	Boring diameter (in.).
DIA_CAS1	N	8	Casing diameter (in.).
CAS_MAT1	C	1	Casing material (USGS WATSTORE codes): B-brick, C-concrete, D-copper, F-Teflon/fluorocarbon, G-galvanized iron, I-wrought iron, M-other metal, P-PVC/plastics, R-rock/stone, S-steel, T-tile, W-wood, U-coated steel, Z-other.
DIA_OPN1	N	6	Diameter of open interval (in.).
LEN_OPN1	N	6	Length of open interval (nearest 0.01 ft.)
TYP_OPN1	C	1	Type of open interval (USGS WATSTORE codes): P-perforated/slotted screen, L-louvered/shuttered screen, S-screen (unknown type), F-fracture, R-wire wound, M-mesh, T-sand point, W-walled, X-open hole, Z-other.

Table 1, Continued

FIELD DEFINITIONS FOR SITE DESCRIPTION FILE

PASCO LANDFILL
PASCO, WASHINGTON

Field	Type	Width	Definition
TYPE_OMT1	C	1	Material type, open interval (USGS WATSTORE codes): R-stainless steel, F-Teflon/fluorocarbon, G-galvanized iron, P-PVC/plastic, B-brass/bronze, W-wrought iron, S-steel, T-tile, C-concrete, M-other metal, Z-other.
INT_COMM	C	240	Comments, open interval.
LOG_AVAIL	C	1	Well log data available? (Y/N).
TYP_LOG	C	1	Type of well log (USGS WATSTORE codes): A-time, B-collar, C-caliper, D-driller, E-electric, F-fluid conduction, G-geologist, H-magnetic, I-induction, J-gamma ray, K-dip meter, L-lateral log, M-microlog, N-neutron, O-microlateral log, P-photo/video, Q-radioactive, S-sonic, T-temperature, U-gamma gamma, V-fluid velocity, X-core, Z-other.
LOG_DOC	C	240	Log data source documents (e.g. Remedial Investigation Report).
OTHER_DOC	C	240	Other data source documents.
LOG_LOC	C	60	Location of well log (e.g., Ecology Southwest Regional Office).
AQUI_TEST	C	1	Aquifer testing performed (Y/N).
PUMP_DATA	C	240	Pump data such as: Type, Manufacturer, Horsepower, and depth set.
ANDAT_AVAL	C	1	Analytical data available (Y/N).
PROGRAM	C	9	Ecology program (TCP, WQFA, WQ, other).
GEN_COMM	C	240	General comments.
HUCODE	C	8	USGS Hydrologic Unit Code from Appendix D.
STA_TYPE	C	12	Station type (Groundwater, Surface Water, Soil, or Air).
AGN_USE	C	1	Agency use (USGS codes): A-active, I-inactive, O-inventory only.
PRI_STA	C	15	Ecology Monitoring Well No. will be assigned by Ecology TCP Program.
STA_ID	C	12	Site well ID no. or other designation.

Table 1, Continued

FIELD DEFINITIONS FOR SITE DESCRIPTION FILE

PASCO LANDFILL
PASCO, WASHINGTON

Field	Type	Width	Definition
X_LOCATION	C	12	Surveyed coordinates reported in the State Plane Coordinates (to the nearest ft.).
Y_LOCATION	C	12	Surveyed coordinates reported in the State Plane Coordinates (to the nearest ft.).
LO_DAT_U	C	5	Year of reference datum either 1929 or 1983 and which system L Lat Long or S for State Plane Coordinate System.
LOC_DATUM	C	48	Reference datum from map or survey e.g., 1983 North American Datum (see RCW 58.20).
DEPT_WATER	N	8	Depth to water (in ft.) at time of sampling.
WTR_ELEV	N	8	Water level elevation (in ft.) at the time of sampling.
AGENCY	C	8	Agency requesting sampling data.
SAMPLE_DAT	D	8	Date of well sampling (mm/dd/yyyy).
ANALYZ_DAT	D	8	Date the sample was analyzed (mm/dd/yyyy).
SAMPLE_ID	C	8	Sample ID code or no.
CONSTITUEN	C	30	Chemical constituent names as defined in Ecology's Chemical Dictionary (see attached Appendix A).
GAS_ID	C	12	Chemical Abstract Systems ID (see Appendix A).
P_CODE	C	5	STORET Parameter Code (see Appendix A).
RESULT	N	12	Detected chemical concentration result.
UNITS	C	10	Units of measurement (e.g., $\mu\text{g/kg}$).
QUAL	C	4	Contract Laboratory Program chemical data qualifiers (such as U, J, R, UJ, etc.). Non-Contract Lab Program qualifiers, such as less-than signs ("<") or asterisks, are not acceptable (see attached).
LIMIT	C	10	Lab instrument detection limit.
DILUTION	N	6	Amount the sample was reduced and diluted to accommodate analysis (i.e. 10X, 20X).

Table 1, Continued

FIELD DEFINITIONS FOR SITE DESCRIPTION FILE

PASCO LANDFILL
PASCO, WASHINGTON

Field	Type	Width	Definition
FILTERED	L	1	Was the sample filtered? Yes(Y) or No(N).
ANALYSIS_METHOD	C	15	EPA analysis method descriptions (i.e. EPA Method 601).
LAB_ID	C	10	Laboratory performing analysis.
MEAS_ELEV	N	8	Surveyed elevation of the measuring point used to determine water level depths and elevations (nearest 0.01 ft.).
MEAS_DESC	C	48	Description of the well measuring point used (e.g., top of casing, file mark on casing, etc.).
DATUM	C	48	Vertical datum used to reference elevations (e.g., MSL and source/data of information).
MATRIX	C	2	Type of sample; water, sediment, soil, other (from matrix portion of Ecology Form ECY 040-115).
SOURCE_COD	C	2	Physical environment sampled (from source codes and description ECY 040-115).

6 DATA REPORTING TO ECOLOGY

Groundwater data will be transferred to Ecology via comma-delineated ASCII files as outlined in the July 12, 1991, Ecology Memorandum (No. 91-1) on groundwater data submittals. The data will be submitted on duplicate, MS DOS-formatted magnetic disks and in a hardcopy backup of the disks' contents.

7 COMPUTER SYSTEM SECURITY

Once the project-specific master file has been created in a secure area of the data management system, access to the file is restricted to authorized system managers. There will only be two persons who are able to create and/or modify the master data set. Project team members have read-only access to the data for purposes of data analysis and reporting.

Backup of the data master file is performed daily by the computer system supervisor if the file has been altered. The entire computer network is backed up weekly, including all active data bases. Burlington employs a "grandfather-father-son" backup procedure for all active files. Upon completion of the project, the master files are archived on magnetic media. A complete reference to the archived files is included in the project file.